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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,975	03/19/2004	Kuninori Ito	2003-1656A	6474

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WASHINGTON, DC 20006-1021

EXAMINER

LEUNG, KA CHUN A

ART UNIT	PAPER NUMBER
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3747

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/803,975	Applicant(s) ITO ET AL.	
	Examiner Ka Chun Leung	Art Unit 3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered. In particular, reference 'WO 02/079629' is listed on Page 5 of the specification.

Specification

2. The disclosure is objected to because of the following informalities: the first paragraph of Page 15 in the specification discusses the construction of "the electric power generation plant" by enterprising bodies as opposed to an electric power generation system as disclosed elsewhere in the specification.

Appropriate correction is required.

Claim Objections

3. Claim 3 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Regarding Claim 3, the

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recited limitation fails to further limit the parent claim since it does not incorporate limitations that structurally affect the gas engine electric power generating system. Presently, the claim limitations recited only disclose the system's intended use and has not been given any patentable weight.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 4 and 5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding Claims 4 and 5, the specification does not disclose any "affiliated systems" or "mutual patronage relation" between one or a plurality of the systems.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over WU et al (US 6,176,224) in view of YAMAMOTO et al (US 2003/0188714).

10. WU et al discloses a method of operating an internal combustion engine utilizing a low energy (lean) gaseous fuel comprising of an internal combustion engine assembly (10), an engine (12), and a generator (14) driven by the crankshaft (16) of the engine (12). The engine assembly (10) further includes a pressure sensor (32) and an engine

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control unit (34). The pressure sensor (32) is positioned in the fuel-air mixture conduit (27) to measure pressure created by the flow of the fuel-air mixture passing, generating a load signal on data line (36), which is in data communication with engine control unit (34). As described in the Background of the Invention, low energy gaseous fuels are abundant source of cheap energy and are released by coal mines and landfills. WU et al further discusses that an internal combustion engine can be used to drive a generator in order to produce electricity that can ultimately be fed into a power grid of a electric utility company In order to generate revenue or power devices located proximate to the generator. However, WU et al does not disclose the use of a pilot fuel oil injection, nor a combustion diagnosis apparatus that compares maximum cylinder pressure with compression pressures.

11. YAMAMOTO et al discloses distinctly discloses a combustion diagnosis apparatus for adjusting combustion conditions at the occurrence of knock, misfire, and flame quenching in internal combustion engines, including gas engine utilizing fuel gas. Referring to paragraph [0168], the combustion control apparatus (200) "controls the fuel injection quantity to be injected from the gas injection device (10) and the injection timing and quantity of a pilot fuel injected from the pilot fuel injection valve (0011). As noted in paragraphs [0131] and [0162], the ignition device (11) is provided with the pilot fuel injection valve (0011) in order to promote combustion of lean fuel gas/air mixture in the main chamber.

12. Thus it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have provided the engine of WU et al with the

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combustion diagnosis apparatus and an ignition device with a pilot fuel injection valve, in light of the teachings of YAMAMOTO et al, in order to detect and adjust abnormal combustion conditions to provide smooth engine operation and also to promote combustion of lean fuel gas/air mixtures.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. KILMER (US 6,578,559) discloses a methane gas control system which helps eliminate methane gas from boreholes in coal mines, the system comprising of a blower expelling an air stream to a fuel collector and a heated dryer to extract methane gas from the air. The heated dryer is connected to an engine which is partially fueled by the methane gas.


b. RAUTENBACH et al (US 6,595,001) discloses a method for utilizing methane-containing gas by feeding methane-containing gas from a location such as a waste dump to a gas engine coupled with a generator assembly for generating electricity.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ka Chun Leung whose telephone number is (571) 272-9963. The examiner can normally be reached on 7:30AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Cronin can be reached on (571) 272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KLL
31 JAN 2007
Ka Chun Leung
Examiner
Art Unit 3747


STEPHEN K. CRONIN
SUPERVISORY PATENT EXAMINER